APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,097	09/18/2003	David Arnold Luick	ROC920030200US1	8313

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EXAMINER
MCCARTHY, CHRISTOPHER S

ART UNIT	PAPER NUMBER
2113	

DATE MAILED: 07/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 September 2003*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9-15,17 and 18* is/are rejected.

7)☒ Claim(s) *8 and 16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some *   c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/27/06*

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed
> in the United States before the invention by the applicant for patent or (2) a patent granted on an application for
> patent by another filed in the United States before the invention by the applicant for patent, except that an
> international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this
> subsection of an application filed in the United States only if the international application designated the United
> States and was published under Article 21(2) of such treaty in the English language.

2.   Claims 1-3, 6-7, 9-13, 17-18 are rejected under 35 U.S.C. 102(e) as being anticipated by

Akrout et al. U.S. Patent 6,785,841

As per claim 1, Akrout teaches a digital data processing apparatus, comprising: at least

one processor, each said at least one processor executing at least one respective thread of

processor-executable instructions (column 2, lines 13-15), said at least one processor collectively

including: (a) a plurality of parallel pipelines, each pipeline of said plurality of parallel pipelines

having the capability to perform a set of pre-defined functions on respective input data (column

3, lines 64-66; column 4, lines 40-41, wherein, each processor has a pipeline and the processors

are in parallel, so the pipelines are also in parallel); and (b) control logic controlling the routing

of data to said plurality of parallel pipelines, wherein said control logic, responsive to detection

of a failure of a first pipeline of said plurality of parallel pipelines, causes data intended for

processing by said first pipeline to be processed by a second pipeline of said plurality of parallel

pipelines (column 5, lines 1-5, wherein, a first processor with its respective pipeline is failed over to the redundant processor with its respective pipeline).

As per claim 2, Akrout teaches the digital data processing apparatus of claim 1, wherein said plurality of parallel pipelines comprises at least one redundant pipeline (column 4, line 65 – column 5, line 1).

As per claim 3, Akrout teaches the digital data processing apparatus of claim 2, wherein said plurality of parallel pipelines comprises N primary pipelines and a single redundant pipeline, said redundant pipeline providing redundant function in the event of failure of any single one of said N primary pipelines, where N is greater than 1 (column 4, line 65 – column 5, line 1).

As per claim 6, Akrout teaches the digital data processing apparatus of claim 1, wherein said at least one processor is a plurality of processors, said plurality of processors sharing at least one of said plurality of parallel pipelines (column 4, lines 40-41, 57 – column 5, line 5, wherein, all the processors share access to the same, single redundant processor).

As per claim 7, Akrout teaches the digital data processing apparatus of claim 6, wherein said plurality of processors shares a redundant pipeline of said plurality of parallel pipelines (column 4, lines 40-41, 57 – column 5, line 5, wherein, all the processors share access to the same, single redundant processor).

As per claim 9, Akrout teaches the digital data processing apparatus of claim 1, wherein said plurality of parallel pipelines perform arithmetic operations on floating point data (column 4, lines 24-27).

As per claim 10, Akrout teaches the digital data processing apparatus of claim 9, wherein said plurality of parallel pipelines perform arithmetic operations on mixed data, including floating point data and fixed point data (column 4, lines 24-27).

As per claim 11, Akrout teaches the digital data processing apparatus of claim 1, further comprising: a plurality of processors (column 4, lines 40-41); a memory storing instructions for execution on said plurality of processors; and at least one bus coupling said plurality of processors to said memory (column 3, lines 39-41).

As per claim 12, Akrout teaches a processor, comprising: a plurality of parallel pipelines, each pipeline of said plurality of parallel pipelines having the capability to perform a set of pre-defined functions on respective input data, said plurality of parallel pipelines including at least one redundant pipeline (column 3, lines 64-66; column 4, lines 40-41, 65 – column 5, lines 1); and control logic controlling the routing of data to said plurality of parallel pipelines, wherein said control logic, responsive to detection of a failure of a first pipeline of said plurality of parallel pipelines, causes data intended for processing by said first pipeline to be processed by a second pipeline of said plurality of parallel pipelines (column 5, lines 1-5).

As per claim 13, Akrout teaches the processor of claim 12, wherein said plurality of parallel pipelines comprises N primary pipelines and a single redundant pipeline, said redundant pipeline providing redundant function in the event of failure of any single one of said N primary pipelines, where N is greater than 1 (column 4, line 57 – column 5, line 1).

As per claim 17, Akrout teaches the processor of claim 12, wherein said plurality of parallel pipelines perform arithmetic operations on floating point data (column 4, lines 24-27).

As per claim 18, Akrout teaches the processor of claim 17, wherein said plurality of

parallel pipelines perform arithmetic operations on mixed data, including floating point data and

fixed point data (column 4, lines 24-27).

The applied reference has a common assignee with the instant application. Based upon

the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C.

102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37

CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the

inventor of this application and is thus not the invention "by another," or by an appropriate

showing under 37 CFR 1.131.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

4.   Claims 4-5, 14-15 are rejected under 35 U.S.C. 103(a) as being obvious over Akrout in

view of Dye U.S. Patent 6,412,061.

As per claims 4/14, Akrout teaches the digital data processing apparatus/processor of

claim 1/12 (see claim 1/12 rejection). Akrout does not explicitly teach wherein said control logic

comprises selection logic at one or more inputs to each respective pipeline, said selection logic

controlling the selection between a primary source and a secondary source of pipeline data for

the respective pipeline. Dye does teach wherein said control logic comprises selection logic at one or more inputs to each respective pipeline, said selection logic controlling the selection between a primary source and a secondary source of pipeline data for the respective pipeline (column 3, lines 18-21, wherein, each pipeline with a respective data selector, selects either data from the memory or another element). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the selection logic of Dye with the parallel processing of Akrout. One of ordinary skill in the art would have been motivated to combine the selection logic of Dye with the parallel processing of Akrout because Dye teaches the need for improved pipeline/processor architecture to increase processor performance, especially in a graphics processor (column 2, lines 60-64); an explicit desire of Akrout (column 4, lines 39-44).

As per claims 5/15, Akrout teaches the digital data processing apparatus//processor of claim 4/14. Akrout does not explicitly teach wherein said selection logic is integrated with operand source selection logic for one or more stages of the respective pipeline. Dye does teach wherein said selection logic is integrated with operand source selection logic for one or more stages of the respective pipeline (column 3, lines 12-14, 29-48, wherein, each stage/latch can perform an operand function). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the selection logic of Dye with the parallel processing of Akrout. One of ordinary skill in the art would have been motivated to combine the selection logic of Dye with the parallel processing of Akrout because Dye teaches the need for improved pipeline/processor architecture to increase processor performance, especially in a graphics processor (column 2, lines 60-64); an explicit desire of Akrout (column 4, lines 39-44).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Allowable Subject Matter

5.   Claims 8, 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

6.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: See attached PTO-892.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Christopher S. McCarthy whose telephone number is (571)272-

3651. The examiner can normally be reached on M-F, 9 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Robert Beausoliel can be reached on (571)272-3645. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Christopher S. McCarthy
Examiner
Art Unit 2113